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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/626,610	07/25/2003	Wataru Asano	240906US2SRD	9359

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OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
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EXAMINER

SMITHERS, MATTHEW

ART UNIT	PAPER NUMBER
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2137

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/16/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/626,610

Applicant(s)

ASANO ET AL.

Examiner

Matthew B. Smithers

Art Unit

2137

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7,9-12,14-17,20,23 and 24 is/are rejected.
- 7) ☒ Claim(s) 8,13,18,19 and 25 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date See Continuation Sheet.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :10/23/03;
6/24/04;3/15/05; 10/17/05; 11/27/06.

DETAILED ACTION

Information Disclosure Statement

The information disclosure statements filed October 23, 2003, June 24, 2004, March 15, 2005 and November 27, 2006 has been placed in the application file and the information referred to therein has been considered as to the merits.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-7, 9-12, 14-17, 20, 23 and 24 are rejected under 35 U.S.C. 102(e) as being anticipated by US 20050094848 granted to Carr et al.

Regarding claim 1, Carr meets the claimed limitations as follows:

“A digital watermark detection method of detecting watermark information embedded in an input image signal, comprising: extracting a specific frequency component signal having a phase from the input image signal; controlling the phase of the specific frequency component signal; acquiring a cross-correlation value between the phase-controlled specific frequency component signal and the input image signal; and

detecting the watermark information from the cross-correlation value.” see paragraphs [0096]-[0101]; paragraphs [0138]-[0189] and Figures 6 and 12.

Regarding claim 2, Carr meets the claimed limitations as follows:

“A digital watermark detection method of detecting watermark information embedded in an input image signal, comprising: computing an auto-correlation function of the input image signal; generating a specific frequency component signal by filtering the auto-correlation function; and detecting the watermark information from the specific frequency component signal.” see paragraphs [0096]-[0101]; paragraphs [0138]-[0189] and Figures 6 and 12.

Regarding claim 3, Carr meets the claimed limitations as follows:

“A digital watermark detection method of detecting watermark information embedded in an input image signal, comprising: computing an auto-correlation function of the input image signal; generating a first accumulation signal by accumulating the auto-correlation function for a first period of time; extracting a specific frequency component signal having an amplitude from the first accumulation signal; normalizing the amplitude of the specific frequency component signal; generating a second accumulation signal by accumulating the normalized specific frequency component signal for a second period of time longer than the first period of time; and detecting the watermark information from the second accumulation signal.” see paragraphs [0096]-[0101]; paragraphs [0138]-[0189] and Figures 6 and 12.

Regarding claim 4, Carr meets the claimed limitations as follows:

“A digital watermark detection apparatus which detects watermark information embedded in an input image signal, comprising: an extraction unit configured to extract a specific frequency component signal having a phase from the input image signal; a controller which controls the phase of the specific frequency component signal; a correlator which computes a cross-correlation value between the phase-controlled specific frequency component signal and the input image signal; and a detector unit configured to detect the watermark information from the cross-correlation value.” see paragraphs [0096]-[0101]; paragraphs [0138]-[0189] and Figures 6 and 12.

Regarding claim 5, Carr meets the claimed limitations as follows:

“The digital watermark detection apparatus according to claim 4, wherein the detector unit detects the watermark information by determining a polarity of a peak in the cross-correlation value.” see paragraphs [0172]-[0178] and Figures 6 and 12.

Regarding claim 6, Carr meets the claimed limitations as follows:

“A digital watermark detection apparatus which detects watermark information embedded in an input image signal, comprising: a correlator which computes an auto-correlation function of the input image signal; a generator which generates a specific frequency component signal by filtering the auto-correlation function; and a detector unit configured to detect the watermark information from the specific frequency component signal.” see paragraphs [0096]-[0101]; paragraphs [0138]-[0189] and Figures 6 and 12.

Regarding claim 7, Carr meets the claimed limitations as follows:

“The digital watermark detection apparatus according to claim 6, wherein the correlator comprises a controller which controls a phase of the input image signal to generate a

phase-controlled input image signal, the correlator computing, as the auto-correlation coefficient, a correlation value between the phase-controlled input image signal and the original input image signal.” see paragraphs [0096]-[0101]; paragraphs [0138]-[0189] and Figures 6 and 12.

Regarding claim 9, Carr meets the claimed limitations as follows:

“The digital watermark detection apparatus according to claim 6, wherein the detector unit detects the watermark information by determining a polarity of a peak of the specific frequency component signal.” see paragraphs [0096]-[0101]; paragraphs [0138]-[0189] and Figures 6 and 12.

Regarding claim 10, Carr meets the claimed limitations as follows:

“The digital watermark detection apparatus according to claim 6, wherein the detector unit detects the watermark information using at least first and second detection manners, the detector unit determining that the watermark information is embedded, if the detection results are coincide to each other.” see paragraphs [0096]-[0101]; paragraphs [0138]-[0189] and Figures 6 and 12.

Regarding claim 11, Carr meets the claimed limitations as follows:

“A digital watermark detection apparatus which detects watermark information embedded in an input image signal, comprising: a correlator which computes an auto-correlation function of the input image signal; a first accumulator which accumulates the auto-correlation function for a first period of time to generate a first accumulation signal; an extraction unit configured to extract a specific frequency component signal from the first accumulation signal; a normalizing unit configured to normalize an amplitude of the

specific frequency component signal; a second accumulator which accumulates the normalized specific frequency component signal for a second period of time longer than the first period of time to generate a second accumulation signal; and a detector unit configured to detect the watermark information from the second accumulation signal.” see paragraphs [0096]-[0101]; paragraphs [0138]-[0189] and Figures 6 and 12.

Regarding claim 12, Carr meets the claimed limitations as follows:

“The digital watermark detection apparatus according to claim 11, wherein the correlator comprises a controller which controls a phase of the input image signal to generate a phase-controlled input image signal, the correlator computing, as the auto-correlation coefficient, a correlation value between the phase-controlled input image signal and the original input image signal.” see paragraphs [0096]-[0101]; paragraphs [0138]-[0189] and Figures 6 and 12.

Regarding claim 14, Carr meets the claimed limitations as follows:

“The digital watermark detection apparatus according to claim 11, wherein the detector unit detects the watermark information by determining a polarity of a peak of the specific frequency component signal.” see paragraphs [0096]-[0101]; paragraphs [0138]-[0189] and Figures 6 and 12.

Regarding claim 15, Carr meets the claimed limitations as follows:

“The digital watermark detection apparatus according to claim 11, wherein the detector unit detects the watermark information by determining a level of the second accumulation signal using a threshold value that is changed in accordance with the

second period of time.” see paragraphs [0096]-[0101]; paragraphs [0138]-[0189] and Figures 6 and 12.

Regarding claim 16, Carr meets the claimed limitations as follows:

“The digital watermark detection apparatus according to claim 11, wherein the detector unit detects the watermark information using at least first and second detection manners, the detector unit determining that the watermark information is embedded, if the detection results are coincide to each other.” see paragraphs [0096]-[0101]; paragraphs [0138]-[0189] and Figures 6 and 12.

Regarding claim 17, Carr meets the claimed limitations as follows:

“The digital watermark detection apparatus according to claim 11, wherein at least one of the correlator, the first accumulator, the normalizing unit, and the second accumulator includes a processor, and which further comprising a controller which controls an operation amount of the correlator per unit time in accordance with a throughput of the processor.” see paragraphs [0096]-[0101]; paragraphs [0138]-[0189] and Figures 6 and 12.

Regarding claim 20, Carr meets the claimed limitations as follows:

“The digital watermark detection apparatus according to claim 11, further comprising an image rotation unit located before the correlator and configured to perform an image rotation operation on the input image signal.” see paragraphs [0096]-[0101]; paragraphs [0138]-[0189] and Figures 6 and 12.

Regarding claim 23, Carr meets the claimed limitations as follows:

"The digital watermark detection apparatus according to claim 11, wherein the detector unit detects a level of the second accumulation signal, by performing a determination using a threshold value changed in accordance with the second accumulation period of time." see paragraphs [0096]-[0101]; paragraphs [0138]-[0189] and Figures 6 and 12.

Regarding claim 24, Carr meets the claimed limitations as follows:

"The digital watermark detection apparatus according to claim 11, wherein the detector unit detects the watermark information using at least first and second detection manners, the detector unit determining that the watermark information is embedded, if the detection results are coincide to each other." see paragraphs [0096]-[0101]; paragraphs [0138]-[0189] and Figures 6 and 12.

Allowable Subject Matter

Claims 8, 13, 18, 19 and 25 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

With respect to claims 8 and 13, the cited prior art fails to specifically teach wherein the correlator computes the auto-correlation function based on result obtained by thinning pixel of the input image signal.

With respect to claim 18, the cited prior art fails to specifically teach wherein the controller periodically stops computation of the correlator to reduce the operation amount, if the throughput is lower than a threshold value.

With respect to claim 19, the cited prior art fails to specifically teach wherein at least one of the correlator, the first accumulator, the normalizing unit, and the second accumulator includes a processor, and which further comprising a controller which periodically stops computation of the correlator and increases the second period of time, if the throughput is lower than a threshold value.

With respect to claim 21, the cited prior art fails to specifically teach wherein the image rotation unit comprises a line buffer which reads a plurality of line components of the input image signal at a time and temporarily accumulates them, and a read unit configured to read the accumulated line components with reading portions of the line components being shifted to one another, and to supply the read line components to the correlator.

With respect to claim 22, the cited prior art fails to specifically teach wherein the read unit shifts the reading portions of the line component in units of a given number of pixels of the input image signal.

With respect to claim 25, the cited prior art fails to specifically teach a third accumulator which accumulates the normalized specific frequency component signal for a third period of time longer than the first period of time and shorter than the second period of time, to generate a third accumulation signal, and wherein the detector unit provisionally detects the watermark information from the third accumulation signal a

given number of times to obtain a plurality of provisional detection results, the detector unit determining that the detection results based on the second accumulation signal is valid, if more than half of the provisional detection results are coincide.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

A. Werner et al (US 7,130,443) discloses a system for detecting attacks on watermarks embedded in data.

B. Yamakage et al (US 6,952,486) discloses a system for detecting scaling or rotation attacks on watermarks embedded in data.

C. Muratani (US 6,901,515) discloses a method for detecting collusion attacks on watermarks embedded in data.


D. Op De Beeck et al (WO 0124113) discloses a system for detecting watermarks.

E. van Schyndel et al., "Key Independent Watermark Detection", discloses a method for verifying the presence of a encrypted watermark without knowledge of the key used for the encryption.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew B. Smithers whose telephone number is (571) 272-3876. The examiner can normally be reached on Monday-Friday (8:00-4:30) EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Emmanuel L. Moise can be reached on (571) 272-3865. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Matthew B Smithers
Primary Examiner
Art Unit 2137